



# **-LTPP Seasonal Monitoring Program**

## **Site Monitoring Suspension Status Draft Final Report for GPS Section 831801 (83A) Brandon, Manitoba**

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Research

Pavement Management Systems

Evaluation & Design Services

Technology Transfer

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# **LTPP Seasonal Monitoring Program**

## **Site Monitoring Suspension Status Draft Final Report for GPS Section 831801 (83A) Brandon, Manitoba**

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FHWA CONTRACT No. DTFH61-96C-00013

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### *Prepared for*

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**LTPP Seasonal Monitoring Program  
Site Monitoring Suspension Status  
Draft Final Report for  
GPS Section 831801 (83A)  
Brandon, Manitoba**

**1.0 INTRODUCTION**

As dictated by seasonal monitoring procedures, the North Central Regional Coordination Office has suspended data collection for the Long Term Pavement Performance (LTPP) General Pavement Study (GPS) section 831801 for a period of one year effective September 16, 1997. The test section, which is part of the Seasonal Monitoring Program (SMP) managed by the Federal Highway Administration (FHWA) LTPP Division, is approximately 46 kilometers west of Brandon, Manitoba, on the westbound driving lane of PTH-1. Additional background information on the test section, types of instruments installed, and the in-place pavement structure can be found in the *Site Installation Report for GPS Section 831801 (83A), Brandon, Manitoba*, dated January 1996 (1).

This report contains information on data collection activities conducted on September 16, 1997. After the installation of instrumentation in the test section on October 12, 1993, the test section was visited 25 times for SMP data collection by Braun Intertec, until June 21, 1995. The test section was then visited 19 times for onsite SMP data collection by the Manitoba Department of Highways.

Beginning October 16, 1996, the site was visited 13 times for SMP data collection by ERES Consultants. As of September 16, 1997, Manitoba Department of Highways has assumed SMP data collection from the site, until September 1998, after which ERES Consultants will monitor the site for another year. The dates of these visits and the activities performed can be found in the SMP data collection summary table in appendix A. This section is planned to be monitored every other year for the remainder of the LTPP study or until it is removed from the study.

The report presents a description of the following activities: SMP data collection activities, including evaluation of instrument and equipment performance prior to suspension of monitoring, and schedule for resumption of monitoring.

## **2.0 SMP DATA COLLECTION**

### **2.1 SMP Data Collection and Upload**

On ERES Consultants' last site visit of September 16, 1997, the full suite of SMP monitoring measurements in the *LTPP Seasonal Monitoring Program Instrument Installation and Data Collection Guidelines* (2) was performed. These include the following:

- FWD and associated measurements.
- Elevation survey.
- Manual distress survey with transverse profile measurements.

- Manual electrical resistivity measurements (two- and four-point).
- Automated mobile data measurements (Time Domain Reflectometry [TDR] and resistivity).
- Water table measurements.

A summary of all the SMP data collected to date can be found in the SMP data collection summary table in appendix A. The specific type and amount of data collected can be found on the SMP field activity report (data sheet SMP-D10) in appendix B. Six other SMP data sheets pertaining to the data collection activities are also in appendix B. The locations for FWD and elevation measurements can be found in the site information sheet (SIS) in appendix C.

As can be seen in the SMP data collection summary table in appendix A, longitudinal profile measurements were recorded. All the data collected to date have been processed and uploaded into the RIMS.

## **2.2 Instrument and Equipment Problems**

All the sensors in the test section (TDR, rain gauge, and Measurement Research Corporation [MRC]) were evaluated by reviewing the data from the onsite and mobile dataloggers using the SMPCheck 2.5c program (3). A review of the data collected during this visit indicated that all sensors were functioning as expected, with the following exceptions: MRC #1 failed on August 5, 1997. All TDR traces all have the maximum and minimum points on the traces that enable analysis.

## **3.0 INSTRUMENT DE-INSTALLATION ACTIVITIES**

### **3.1 Suspension Preparation and Repairs to Instrumentation Hole**

All instrumentation remains installed at this site. The instrument block is in excellent condition, and the temperature profile holes in the pavement have been filled with silicone sealant.

### **3.2 Unique Site Features**

This test section is the 6h SMP installation in the LTPP North Central Region, In the course of monitoring this site, a solar panel was installed on top of the cabinets to prolong the life of the battery onsite. The solar panel was found to be an effective and significant addition to the SMP onsite data collection equipment that ensured efficient storage and collection of the SMP data stored onsite.



#### **4.0 INSTRUMENT REINSTALLATION**

All instrumentation remains installed at this site. Resumption of SMP monitoring by ERES Consultants scheduled for September, 1998.

#### **5.0 SUMMARY**

This report contains information on suspension of monitoring data collection activities for the LTPP GPS section 831801, conducted on September 16, 1997.

The report presents a description of the SMP data collection activities, including an evaluation of the SMP sensors and equipment. No problems were noted from the data recorded from August 19, 1997, through September 10, 1997, however, MRC #1 failed on August 5, 1997. All the TDR traces have the required maximum and minimum points that enable analysis of the TDR data.

Resumption of monitoring at this site by ERES Consultants is scheduled for September, 1998.

## LIST OF REFERENCES

1. *LTPP Seasonal Monitoring Program Site Installation Report for GPS Section 831801 (83A) Brandon, Manitoba*, Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. January 1996.
2. *LTPP Seasonal Monitoring Program: Instrumentation Installation and Data Collection Guideline*. FHWA-RD-94-110, Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. April 1994.
3. SMPCheck, computer software version 2.5c, prepared for the Federal Highway Administration, Pavement Performance Division, HNR-30, McLean, Virginia. July 1997.
4. Lopez, Aramis, Jr. *Long Term Pavement Performance Directive for the Seasonal Monitoring Program: Directive Number SM-8, Suspension of SMP Site Monitoring Activities*. Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. March 1995.

## **Appendix A - SMP Data Collection Summary Table**

83SA - 831801, PTH-1 WB LANES, 46 KM WEST OF BRANDON, MB

| Date      |     | ONSITE Data |           |      |     | MOBILE Data |            |            |             | Manual Data |             |             |             | FWD Data    |            |     |    | Distress Profile |   |   |   | Comments |  |
|-----------|-----|-------------|-----------|------|-----|-------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|-----|----|------------------|---|---|---|----------|--|
| dd/mm/yy  |     | Pvmt. Temp. | Air Temp. | Rain | TDR | Frost Volts | Backup TDR | Backup TDR | Frost 2-Pt. | Frost 4-Pt. | Water Table | Pvmt. Elev. | Joint Open. | Joint Fault | Man. Temp. | OWP | ML | PE               | M | P | P | D        |  |
| 27-Aug-92 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 10-Jun-93 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 14-Jun-93 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 12-Oct-93 | 93A |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 13-Oct-93 | 93B |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 12-Nov-93 | 93C |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 18-Nov-93 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 13-Dec-93 | 93D |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 17-Jan-94 | 94A |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 14-Feb-94 | 94B |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 18-Feb-94 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 14-Mar-94 | 94C |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 28-Mar-94 | 94D |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 11-Apr-94 | 94E |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 16-Apr-94 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 29-Apr-94 | 94F |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 13-May-94 | 94G |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 17-Jun-94 | 94H |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 18-Jul-94 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 25-Jul-94 | 94I |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 18-Aug-94 | 94J |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 21-Sep-94 | 94K |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 19-Oct-94 | 94L |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 12-Nov-94 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 16-Nov-94 | 94M |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 14-Dec-94 | 94N |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 23-Jan-95 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 25-Jan-95 | 95A |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 15-Feb-95 | 95B |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 14-Mar-95 | 95C |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 28-Mar-95 | 95D |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 11-Apr-95 | 95E |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 25-Apr-95 | 95F |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 27-Apr-95 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 17-May-95 | 95G |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 21-Jun-95 | 95H |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
| 25-Jun-95 |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
|           |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |
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|           |     |             |           |      |     |             |            |            |             |             |             |             |             |             |            |     |    |                  |   |   |   |          |  |

Notes

Denotes data collected and processed by Braun Intertec Corp

Denotes data collected and processed by ERES Consultants, Inc

Denotes data collected by Braun Intertec Corp.

Denotes data collected by ERES Consultants, Inc.

Denotes data collected by MB-DOT and processed by ERES Consultants, Inc.

Denotes data collected and processed by SME

[illegible]

1. Denotes data collected and processed by Braun Intertec Corp.  
 2. Denotes data collected by ERES Consultants, Inc.  
 3. Denotes data collected by Braun Intertec Corp.  
 X Denotes data collected by ERES Consultants, Inc.  
 4. Denotes data collected by Braun Intertec Corp. and processed by ERES Consultants, Inc.  
 M Denotes data collected by MB-DOT and processed by ERES Consultants, Inc.

## **Appendix B - SMP Data Sheets**

- **SMP-D10: SMP Field Activity Report**
- **SMP-D03: Contact Resistance Measurements**
- **SMP-D04: Four-Point Resistivity Measurements**
- **SMP-D05: Ground Water Table Measurement**
- **SMP-D09: Elevation Measurements - AC**
- **SMP-M1: Distress Survey of Instrument Area**

|   |                      |  |
|---|----------------------|--|
| LTPP Seasonal Monitoring Program<br>Data Sheet SMP-D10<br>SMP Field Activity Report |                      | Agency Code <u>[83]</u><br>LTPP Section ID <u>[1801]</u> |
| Onsite Datalogger and Instrumentation   |                      |  |
| File Name - *.ONS   | <u>835497KI</u>      | Comments:  |
| Battery Replace   | Yes - <u>(No)</u>    | Voltages : <u>11.9</u>                                   |
| Repairs/Calib.  | <u>MRC #1 is out</u> |  |
| Other: _____  |                      |  |
| Mobile Datalogger   |                      |  |
| File Name - *.MOB   |                      | Comments:  |
| TDR/Resistance Voltages   | Sets <u>(0 2)</u>    |  |
| Other: _____  |                      |  |
| Manual Data Collection  |                      |  |
| Piezometer  | <u>(Yes)</u> - No    | Comments:  |
| Resistance 2 pt.  | Sets <u>(0 1)</u>    |  |
| Resistivity 4 pt.   | Sets <u>(0 1)</u>    |  |
| Elevations  | Sets <u>(0 1)</u>    | <u>windy, pthly cldy</u>                                 |
| Distress Survey   | <u>(Yes)</u> - No    | <u>Dipstick power failed</u>                             |
| Long. Dipstick Profile  | Yes - <u>(No)</u>    |  |
| Photos or Video   | Yes - No             |  |
| Other: _____  |                      |  |
| FWD and Associated Data   |                      |  |
| FWD Testing   | Sets <u>(0 3)</u>    | Operator: <u>DSP</u>                                     |
| JCP - Snap Rings  | Sets <u>( )</u>      | <u>AC</u>  |
| JCP - Faulting  | Sets <u>( )</u>      | <u>AC</u>  |
| Other: _____  |                      |  |

IF REQUIRED, ATTACH SKETCHES TO THIS DATA SHEET

Comments: \_\_\_\_\_

Prepared by: GFE Employer: ERES/NCRDate (dd/mm/yy): 16 / SEP / 97 Daylight Savings Time (Y or N): Y

LTPP Seasonal Monitoring Program  
Data Sheet SMP-D03  
Contact Resistance Measurements

Agency Code  
LTPP Section ID

[83]

[1801]

Start Time (military): 0940

| Test Position | Switch Settings |       | Voltage (ACV) |         | Current (ACA) |         | Comments |
|---------------|-----------------|-------|---------------|---------|---------------|---------|----------|
|               | I1 V1           | I2 V2 | Range Setting | Reading | Range Setting | Reading |          |
| 1             | 1               | 2     | mil           | 153.2   | mil           | 10.5    |          |
| 2             | 2               | 3     |               | 136.2   |               | 8.4     |          |
| 3             | 3               | 4     |               | 177.8   |               | 5.7     |          |
| 4             | 4               | 5     |               | 185.7   |               | 5.2     |          |
| 5             | 5               | 6     |               | 174.8   |               | 6.8     |          |
| 6             | 6               | 7     |               | 153.9   |               | 6.1     |          |
| 7             | 7               | 8     |               | 180.2   |               | 3.7     |          |
| 8             | 8               | 9     |               | 0.3     |               | 0.3     |          |
| 9             | 9               | 10    |               | 162.9   |               | 2.7     |          |
| 10            | 10              | 11    |               | 177.6   |               | 3.7     |          |
| 11            | 11              | 12    |               | 113.6   |               | 3.8     |          |
| 12            | 12              | 13    |               | 127.9   |               | 4.1     |          |
| 13            | 13              | 14    |               | 131.8   |               | 3.2     |          |
| 14            | 14              | 15    |               | 129.2   |               | 2.8     |          |
| 15            | 15              | 16    |               | 134.2   |               | 3.0     |          |
| 16            | 16              | 17    |               | 93.1    |               | 3.4     |          |
| 17            | 17              | 18    |               | 88.0    |               | 3.1     |          |
| 18            | 18              | 19    |               | 105.1   |               | 2.9     |          |
| 19            | 19              | 20    |               | 82.0    |               | 3.7     |          |
| 20            | 20              | 21    |               | 52.6    |               | 3.8     |          |
| 21            | 21              | 22    |               | 65.4    |               | 3.0     |          |
| 22            | 22              | 23    |               | 37.5    |               | 3.6     |          |
| 23            | 23              | 24    |               | 0.6     |               | 0.6     |          |
| 24            | 24              | 25    |               | 52.8    |               | 4.3     |          |
| 25            | 25              | 26    |               | 61.6    |               | 4.3     |          |
| 26            | 26              | 27    |               | 51.7    |               | 4.3     |          |
| 27            | 27              | 28    |               | 63.9    |               | 4.7     |          |
| 28            | 28              | 29    |               | 55.0    |               | 5.4     |          |
| 29            | 29              | 30    |               | 59.7    |               | 5.6     |          |
| 30            | 30              | 31    |               | 59.0    |               | 5.6     |          |
| 31            | 31              | 32    |               | 42.6    |               | 6.3     |          |
| 32            | 32              | 33    |               | 45.4    |               | 6.4     |          |
| 33            | 33              | 34    |               | 49.2    |               | 5.8     |          |
| 34            | 34              | 35    |               | 50.8    |               | 6.2     |          |
| 35            | 35              | 36    |               | 45.0    |               | 7.2     |          |
| 36            | 36              | 37    |               | 0.1     |               | 69.1    | R1 =     |
| 37            | 37              | 38    |               | 5.5     |               | 52.3    | R2 =     |
| 38            | 38              | 39    |               | 38.7    |               | 38.3    | R3 =     |
| 39            | 39              | 00    |               | 168.0   |               | 0.2     | R4 =     |

Note: R = V/I, in ohms; measured resistances should be compared with known values.

Comments:

Prepared by: GFE Employer: ERES/MCR

Date (dd/mm/yy): 16/SEP/97



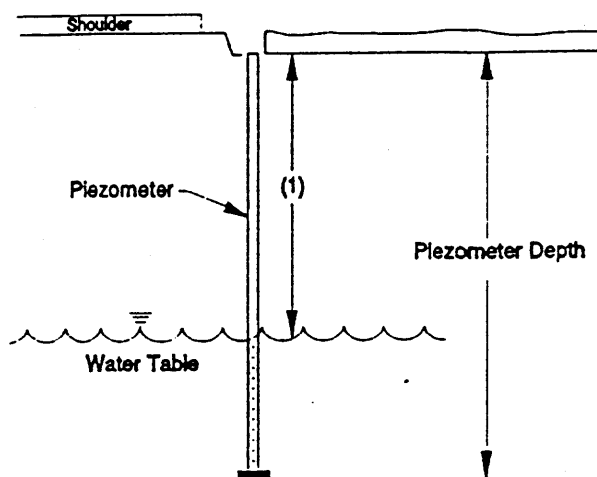
|  |                 |             |
|--|-----------------|-------------|
| LTPP Seasonal Monitoring Program<br>Data Sheet SMP-D05<br>Ground Water Table Measurement | Agency Code     | [ 83 ]      |
|  | LTPP Section ID | [ 1 8 0 1 ] |

Piezometer Depth (m): 4 . 3 0 0

| Measurement Number | Time (military) | Depth to Water <sup>1,2</sup> (m) | Comments |
|--------------------|-----------------|-----------------------------------|----------|
| 1                  | <u>1 0 0 0</u>  | <u>2 . 7 6</u>                    |          |
| 2                  | <u>    </u>     | <u>    </u>                       |          |

<sup>1</sup> Distance from top of piezometer pipe to top of ground water table; to an accuracy of  $\pm 10$  mm (0.4 in)

<sup>2</sup> If piezometer pipe is dry or frozen, enter "time" when observation was made, leave "depth to water" field blank, and enter "pipe is dry" or "pipe is frozen" under comments column.



3 12  
4.8/9  
1.54  
2.76

Comments: \_\_\_\_\_

Prepared by: GFE Employer: ERESDate (dd/mm/yy): 16 / SEP / 97

LTPP Seasonal Monitoring Program  
Data Sheet SMP-D04  
Four-Point Resistivity Measurements

Agency Code  
LTPP Section ID

[83]

[1801]

Start Time (military): 0955

| Test Position | Switch Settings |    |    |    | Voltage (ACV) |                 | Current (ACA) |                | Comments |
|---------------|-----------------|----|----|----|---------------|-----------------|---------------|----------------|----------|
|               | I1              | V1 | V2 | I2 | Range Setting | Reading (Volts) | Range Setting | Reading (Amps) |          |
| 1             | 1               | 2  | 3  | 4  | 1m.7          | 5.8             | 1m.7          | 1.8            |          |
| 2             | 2               | 3  | 4  | 5  |               | 6.6             |               | 1.8            |          |
| 3             | 3               | 4  | 5  | 6  |               | 5.2             |               | 1.4            |          |
| 4             | 4               | 5  | 6  | 7  |               | 4.3             |               | 0.9            |          |
| 5             | 5               | 6  | 7  | 8  |               | 4.7             |               | 0.9            |          |
| 6             | 6               | 7  | 8  | 9  |               | 5.4             |               | 1.2            |          |
| 7             | 7               | 8  | 9  | 10 |               | 3.9             |               | 0.7            |          |
| 8             | 8               | 9  | 10 | 11 |               | 0.1             |               | 0.3            |          |
| 9             | 9               | 10 | 11 | 12 |               | 2.4             |               | 0.7            |          |
| 10            | 10              | 11 | 12 | 13 |               | 2.3             |               | 0.6            |          |
| 11            | 11              | 12 | 13 | 14 |               | 2.0             |               | 1.0            |          |
| 12            | 12              | 13 | 14 | 15 |               | 2.5             |               | 0.8            |          |
| 13            | 13              | 14 | 15 | 16 |               | 1.9             |               | 0.9            |          |
| 14            | 14              | 15 | 16 | 17 |               | 1.7             |               | 0.9            |          |
| 15            | 15              | 16 | 17 | 18 |               | 1.4             |               | 0.8            |          |
| 16            | 16              | 17 | 18 | 19 |               | 1.3             |               | 1.1            |          |
| 17            | 17              | 18 | 19 | 20 |               | 1.3             |               | 1.2            |          |
| 18            | 18              | 19 | 20 | 21 |               | 1.2             |               | 0.9            |          |
| 19            | 19              | 20 | 21 | 22 |               | 1.2             |               | 1.2            |          |
| 20            | 20              | 21 | 22 | 23 |               | 1.3             |               | 1.4            |          |
| 21            | 21              | 22 | 23 | 24 |               | 0.9             |               | 1.0            |          |
| 22            | 22              | 23 | 24 | 25 |               | 1.1             |               | 1.2            |          |
| 23            | 23              | 24 | 25 | 26 |               | 0.1             |               | 0.3            |          |
| 24            | 24              | 25 | 26 | 27 |               | 1.1             |               | 1.3            |          |
| 25            | 25              | 26 | 27 | 28 |               | 1.1             |               | 1.3            |          |
| 26            | 26              | 27 | 28 | 29 |               | 1.2             |               | 1.3            |          |
| 27            | 27              | 28 | 29 | 30 |               | 1.3             |               | 1.3            |          |
| 28            | 28              | 29 | 30 | 31 |               | 1.4             |               | 1.5            |          |
| 29            | 29              | 30 | 31 | 32 |               | 1.6             |               | 1.5            |          |
| 30            | 30              | 31 | 32 | 33 |               | 1.3             |               | 1.5            |          |
| 31            | 31              | 32 | 33 | 34 |               | 1.5             |               | 1.6            |          |
| 32            | 32              | 33 | 34 | 35 |               | 1.7             |               | 1.7            |          |
| 33            | 33              | 34 | 35 | 36 |               | 1.4             |               | 1.7            |          |
| 36            | 36              | 36 | 37 | 37 |               | 0.1             |               | 40.1           | R1 =     |
| 37            | 37              | 37 | 38 | 38 |               | 3.7             |               | 34.1           | R2 =     |
| 38            | 38              | 38 | 39 | 39 |               | 25.6            |               | 25.4           | R3 =     |
| 39            | 39              | 39 | 00 | 00 |               | 111.3           |               | 0.1            | R4 =     |

Note:  $R = V/I$ , in ohms; measured resistances should be compared with known values.

Comments:

Prepared by: GFE Employer: ERES/NCR

Date (dd/mm/yy): 16/SEP/97

|   |   |
|---|---|
| LTPP Seasonal Monitoring Program<br>Data Sheet SMP-D08<br>Elevation Measurements - AC | Agency Code <u>[ 83 ]</u><br>LTPP Section ID <u>[ 1 8 0 1 ]</u> |
|---|---|

Type of Instrument: NA 2000Start Time (military): 1 2 5 0

| BM    | Station        | BS            | HI          | IFS           | FS          | ELEV        | CLOSE         |
|-------|----------------|---------------|-------------|---------------|-------------|-------------|---------------|
| Piez. | <u>1 + 0 0</u> | <u>1.3884</u> | <u>————</u> | <u>1.3885</u> | <u>————</u> | <u>————</u> | <u>1.3886</u> |
| Other | <u>————</u>    | <u>————</u>   | <u>————</u> | <u>————</u>   | <u>————</u> | <u>————</u> | <u>————</u>   |

| Station       | Offset (PE):<br><u>0.16 m</u> | Offset (OWP):<br><u>0.76 m</u> | Offset (ML):<br><u>1.83 m</u> | Offset (IWP):<br><u>2.90 m</u> | Offset (ILE):<br><u>3.51 m</u> | Comments     |
|---------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|--------------------------------|--------------|
| <u>0 - 30</u> | <u>1.6158</u>                 | <u>1.0044</u>                  | <u>0.9785</u>                 | <u>0.9621</u>                  | <u>0.9519</u>                  | <u>WINDY</u> |
| <u>0 - 20</u> | <u>1.0278</u>                 | <u>1.0141</u>                  | <u>0.9907</u>                 | <u>0.9774</u>                  | <u>0.9640</u>                  |              |
| <u>0 - 10</u> | <u>1.0350</u>                 | <u>1.0254</u>                  | <u>0.9991</u>                 | <u>0.9856</u>                  | <u>0.9731</u>                  |              |
| <u>0 + 00</u> | <u>1.0421</u>                 | <u>1.0332</u>                  | <u>1.0088</u>                 | <u>0.9938</u>                  | <u>0.9813</u>                  |              |
| <u>0 + 25</u> | <u>1.0693</u>                 | <u>1.0597</u>                  | <u>1.0338</u>                 | <u>1.0197</u>                  | <u>1.0090</u>                  |              |
| <u>0 + 50</u> | <u>1.0996</u>                 | <u>1.0902</u>                  | <u>1.0654</u>                 | <u>1.0512</u>                  | <u>1.0391</u>                  |              |
| <u>0 + 75</u> | <u>1.1269</u>                 | <u>1.1137</u>                  | <u>1.0890</u>                 | <u>1.0772</u>                  | <u>1.0652</u>                  |              |
| <u>1 + 00</u> | <u>1.1503</u>                 | <u>1.1344</u>                  | <u>1.1072</u>                 | <u>1.0960</u>                  | <u>1.0876</u>                  |              |
| <u>1 + 25</u> | <u>1.1719</u>                 | <u>1.1632</u>                  | <u>1.1366</u>                 | <u>1.1195</u>                  | <u>1.1101</u>                  |              |
| <u>1 + 50</u> | <u>1.1844</u>                 | <u>1.1757</u>                  | <u>1.1517</u>                 | <u>1.1399</u>                  | <u>1.1302</u>                  |              |
| <u>1 + 75</u> | <u>1.1980</u>                 | <u>1.1891</u>                  | <u>1.1616</u>                 | <u>1.1478</u>                  | <u>1.1386</u>                  |              |
| <u>2 + 00</u> | <u>1.1851</u>                 | <u>1.1772</u>                  | <u>1.1542</u>                 | <u>1.1377</u>                  | <u>1.1282</u>                  |              |
| <u>————</u>   | <u>————</u>                   | <u>————</u>                    | <u>————</u>                   | <u>————</u>                    | <u>————</u>                    |              |

Comments: Windy, Pth cdy,Prepared by: GFEEmployer: ERES/NCRDate (dd/mm/yy): 1 6 / 3 E P / 9 7

8 3 S A 9 7 K

|  |  |
|--|--|
| LTPP Seasonal Monitoring Program<br>Data Sheet SMP-M1 (Page<br>Distress Survey of Instrumentation Area | Agency Code [83]<br>Test Section Number [1801] |
|--|--|

Rate the condition of the instrumentation area (check one):

☒

Good (little or no distress; repairs are not required in the immediate future)

☐

Poor (significant distress, repairs required now or in the immediate future)

List any repairs (type and extent) done since instrumentation installation and/or last survey of instrumentation area: None

Additional Comments: Patch over inst. block

Prepared by: GFE Employer: ERES/NCR

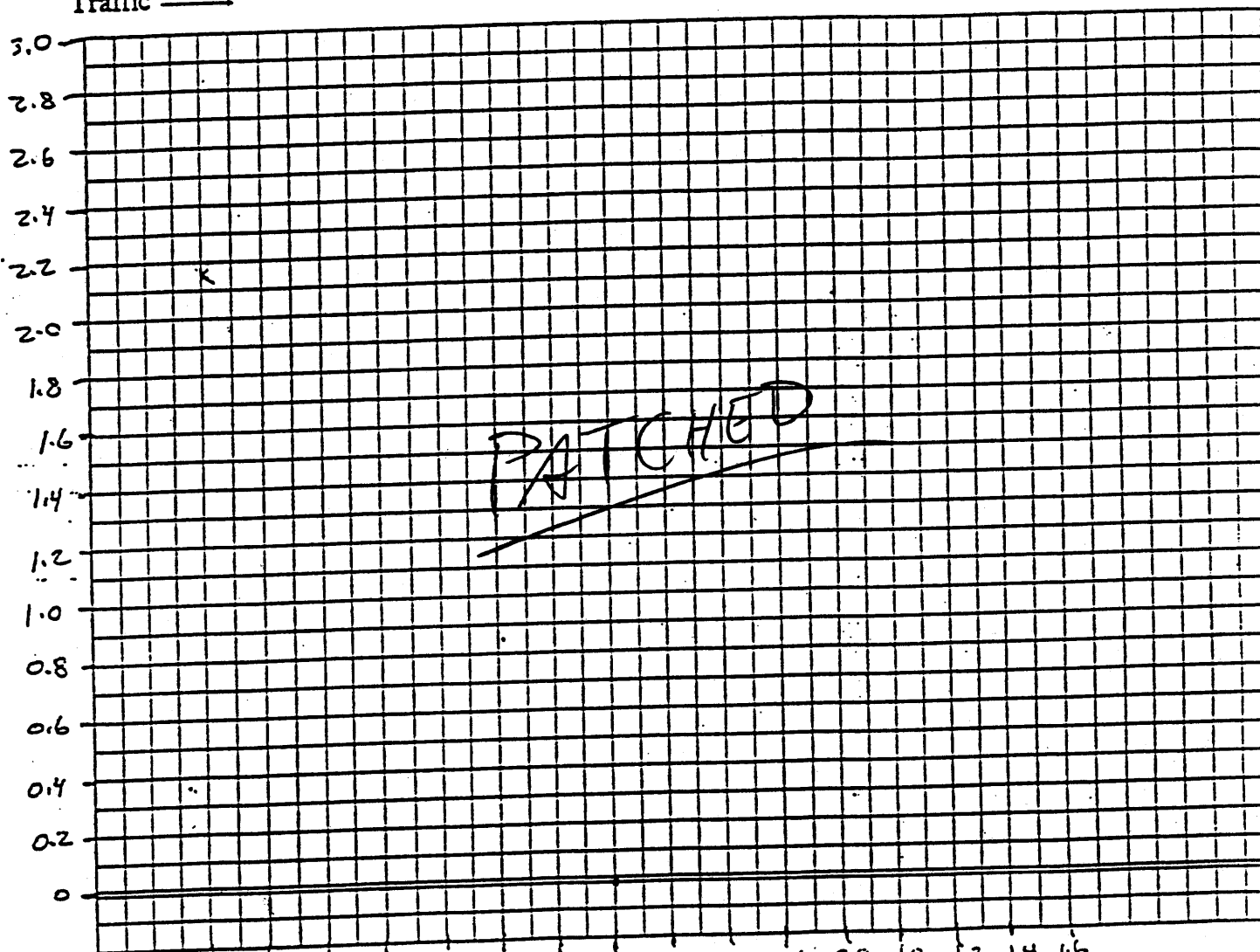
Date: 16 / Sep / 97

8 3 S A 9 7 K

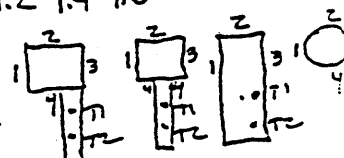
|  |                 |                 |
|--|-----------------|-----------------|
| LTPP Seasonal Monitoring Program<br>Data Sheet SMP-M1 (Page<br>Distress Survey of Instrumentation Area | Agency Code     | [83]            |
|  | SHRP Section ID | [1801]          |
|  | Survey Date     | [16 / SEP / 97] |

Use grid below to sketch distresses within 1.5 m (5 ft) of instrumentation block/hole and trench.  
 Use LTPP Distress Identification Manual to extent possible. (Note: each square in grid equals 0.1 m by 0.1 m area)

Traffic ==



Shoulder Area 1.2 1.0 0.8 0.6 0.4 0.2 0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6  
 1.6 1.4



Use table below to record settlement of pavement in instrumentation area.

Measurement Device: DIPSTICK / STRAIGHT EDGE

| Location                   | Settlement, mm |            |            |            |
|----------------------------|----------------|------------|------------|------------|
|                            | Location 1     | Location 2 | Location 3 | Location 4 |
| Instrumentation block/hole | ___            | ___        | ___        | ___        |
| Trench                     | ___            | ___        | n/a        | n/a        |

## **Appendix C- Site Information Sheet (SIS)**

831801 - 83SA

LOCATION - PTH-1 WB Lanes, 27 Miles (46 Km) West of Brandon, MB

CONTACTS - Richard Murphy (204) 748-2227, Dennis Watson (204) 945-3160

TEMP HOLES - Sta 0-03, Depths are about 0.8", 1.8", and 2.8" (AC thickness = 4.5").

DISTRESS COMMENTS:

Sta     F1 - Tests at Sta 0-20 and at 25 foot intervals from Sta 0+00 to 2+00..

-20     LP ADJACENT TO INSTRUMENTATION HOLE AND L-TRANS.CR.  
         UNDER D2

150     M-TRANS.CR. BETWEEN D6 AND D7

175     M-TRANS.CR. BETWEEN D6 AND D7

Sta     F3 - Tests at Sta 0-30, 0-25, 0-10, and at 25 foot intervals from Sta 0+00 to Sta  
         2+00.

-25     D7 ON INSTRUMENTATION HOLE AND 1' BEHIND M-TRANS.CR.

-10     L-TRANS.CR. 6" IN FRONT OF D7

150     M-TRANS.CR. BETWEEN D6 AND D7

175     M-TRANS.CR. UNDER D7

PIEZOMETER - Sta 1+00, 2.0 feet from edge of paved shoulder, Depth = 4.303M.

ELEVATIONS - No DOT BM

| <u>Offsets:</u> | <u>PE</u> | <u>OWP</u> | <u>ML</u> | <u>IWP</u> | <u>ILE</u> |
|-----------------|-----------|------------|-----------|------------|------------|
| (M)             | 0.16      | 0.76       | 1.83      | 2.90       | 3.51       |
| (ft)            | .05       | 2.5        | 6.0       | 9.5        | 11.5       |
|                 | (nail)    | (hole)     | (hole)    | (hole)     | (nail)     |

Sta:     Transverse profiles at Sta 0-30, 0-20, 0-10, and every 25 feet from Sta 0+00 to  
         Sta 2+00.

COMMENTS     --     Traffic control - (Devin (summer?), Bev (winter?), and John (regular)).